

**REMARKS**

The specification and the claims are amended herein for clarification. No new matter is presented.

**I. Response to Objection to the Specification**

The specification has been objected to as assertedly describing non-elected claims. The Examiner has asserted that appropriate correction is required.

Applicants respectfully traverse the objection to the specification.

The present application was subject to a restriction wherein Applicants elected the subject matter in claims 1-16. However, there is no basis for requiring that the subject matter of the non-elected invention be deleted from the specification. Thus, Applicants submit the objection to the specification is improper.

It may be that the Examiner intended to object to the references in the specification to the preambles of specific claims. To this extent, the specification is to delete references to the preambles of specific claims.

**II. Response Rejection Under 35 U.S.C. § 112**

Claims 1-16 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite as follows.

(1) The Examiner indicates that it is not clear whether lines 4-12 of claim 1 are required for the steps of the method or whether these are intended use.

In response claim 1 is amended to clarify the claimed invention.

(2) The Examiner asserts that the phrase “softening point of the glass should be amended to recite ---softening point of the perform---.

In response claim 1 is amended as suggested by the Examiner.

(3) The Examiner has requested clarification for the term “level” recited in claim 1.

In response claim 1 is amended to clarify the claimed invention.

(4) The Examiner has also raised a question as to whether the undesired gaseous components are the same as the impurities.

In response, Applicants submit that the term “undesired gaseous components” means essentially the same as “impurities” and the claims are amended accordingly.

(5) Per the Examiner, the recitation “the forces of diffusion” is not clear allegedly because diffusion does not have a force.

The claims are amended herein by deleting the phrase “the forces of”.

(6) The Examiner asserts that it is unclear whether, with respect to claims 2 and 3, further limitations or an additional step are recited.

In response Applicants submit that these claims recite further limitations with respect to the diffusion barrier and the claims are amended to clarify the invention accordingly.

(7) With respect to claim 4, the Examiner asserts that the perform does not have an opening and it is not clear what the star, “\*” means.

In response, claim 4 is amended to clarify the invention and Applicants submit that the “\*” indicates multiplication. Therefore, claim 5 is amended by incorporating this mathematical function into the equation for consistency.

(8) The Examiner asserts that it is not clear whether “heat-processing,” as recited in claim 16, refers to a step in claim 1 or if it is an additional step.

In response, Applicants submit that the term “heat-process” refers to the “heating” step in claim 1 and claim 16 is amended accordingly.

(9) The Examiner has asserted that equation (2) as recited on page 18 of the specification and equation (2) as recited in claim 4 are slightly different.

Claim 7 is amended herein by inserting equation (2) as disclosed on page 18 of the specification.

(10) The Examiner also raises various issues of lack of proper antecedent basis for some terms in the claims.

In response, the claims are amended herein to clarify the claimed invention.

In view of the above, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §112, 2<sup>nd</sup> paragraph.

### **III. Response to Claim Rejections Based on Orita**

Claims 1-8, 11-13 and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,192,715 (Orita).

Claims 9-10, 14 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Orita.

Applicants traverse the rejection.

First, Applicants refer to column 8, lines 21-62 of *Orita*, which show that the principle of sealing in *Orita* is not the same as that of the present invention.

*Orita* discloses a method, which is based only on the controlling the pressure difference in the furnace and its surroundings. That is, the pressure difference between the interior and exterior of the furnace ( $\Delta P$ ) is kept positive for ensuring that the direction of flow in the lower portion of the furnace is directed away from the furnace. This condition is, however, not sufficient for ensuring that impurities would not enter the furnace by diffusion against the direction flow. *Orita* suggests that a small overpressure should be maintained but suggests that the magnitude the overpressure in the oven should be made on the basis of the capacity of sealing on the top part of the furnace or vibrations of the optical fiber. Such limits are vague and dedicated to the equipment used. In addition, also flow velocities, barrier distances and the concentrations of residuals are to be adjusted and adapted to each other in proper proportions in order to accomplish a diffusion barrier. Thus, for a skilled person, the teachings of *Orita* are not enabling for establishing an efficient diffusion barrier. Thus, Applicants submit *Orita* neither teaches or achieves a barrier against diffusion of impurities. For at least this reason the present invention is not anticipated or rendered obvious by *Orita*.

Further, according to the present invention, impurities are kept outside the furnace by providing a diffusion barrier, in which the magnitude of flow is sufficient to prevent entry of diffusion-driven particles into the furnace against the barrier.

It should be noted that impurities are driven into the furnace at least by chimney effect and diffusion. The Examiner correctly states that diffusion is spontaneous movement of particles from a region of higher to one of lower concentration and that diffusion is inherent in physical

processes. However, *Orita* is completely silent about diffusion. On the other hand, it is a characteristic feature of the present invention that diffusion, in fact, is a considerable cause of entry of impurities into the furnace when heat-processing glass preforms.

In conclusion, a mere pressure difference does not prevent impurities from entering the furnace. In the vicinity of surfaces of the orifices of the furnace, conventional protective gas flow is weak and diffusion-driven particles can easily enter the furnace. The diffusion barrier flow claimed and dimensioned according to the specification of the present application takes into account also this effect and provides better sealing. Accordingly, the present invention is not rendered obvious by *Orita*.

In view of the above, Applicants respectfully request withdrawal of the rejections based on *Orita*.

#### **IV. Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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**23373**

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